

## **Stacey A. Archfield, Ph.D.**

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### **EDUCATION**

Doctor of Philosophy, Civil and Environmental Engineering, Tufts University, 2009

Title: “Estimation of continuous daily streamflow at ungauged locations in southern New England”

Advisor: Dr. Richard M. Vogel

Master of Science, Geosystems, Massachusetts Institute of Technology, 2001

Title: “Exploring mechanisms for the decrease of atmospheric carbon dioxide during the last glacial maximum using a four-box ocean model”

Advisor: Dr. Edward A. Boyle

Bachelor of Science, Geology, Northeastern University, 1999

Minor in Mathematics

### **PROFESSIONAL APPOINTMENTS**

U.S. Geological Survey, National Research Program

Research Hydrologist, 2013-Present

U.S. Geological Survey, Massachusetts-Rhode Island Water Science Center

Research Hydrologist, 2008-2013

Hydrologist (Project Chief), 2004-2008

Hydrologist, 1998-2004

Tufts University, Department of Civil and Environmental Engineering

Research Assistant, 2003-2009

Massachusetts Institute of Technology, Earth Resources Laboratory

Research Assistant, 2001

Harvard-Smithsonian Center for Astrophysics, Space Geodesy Group

Research Associate, 1999

### **VISITING APPOINTMENTS**

University of Bristol, College of Engineering, March-April 2013

Vienna University of Technology, Department of Hydrology and Water Resources  
Management, April-May 2013

### **HONORS AND AWARDS**

Archfield and Vogel [2010] paper was featured in the EOS Research Spotlight: Eos Trans. AGU, 92(6), 52, doi:10.1029/2011EO060009. *Papers featured in the Research Spotlight are selected by the editors of the 18 journals published by the American Geophysical Union. Only 3 to 4 papers are selected bi-weekly to be featured.* (2011).

Hirsch, Moyer and Archfield [2010] paper was selected as one of four finalists for the William R. Boggess Award, *This award is given to a paper published in the Journal of the American Water Resources Association that best describes, delineates, or analyzes a*

*major problem or aspect of water resources from either a theoretical, applied, or philosophical standpoint. (<http://awramedia.org/jawra/2011/05/11/2011-boggess-finalists/>) (2011).*

Selected to deliver the 2010 U.S. Geological Survey Chief Hydrologist Seminar, *Only one researcher from the U.S. Geological Survey is selected each year to deliver this seminar* (2010).

Outstanding Student Paper Award, American Geophysical Union Fall Meeting (2009).

U.S. Geological Survey Exceptional Performance Rating, *Highest performance rating achievable* (2013; 2012; 2011; 2010; 2009; 2008; 2007; 2006).

Tufts University Civil & Environmental Engineering Department Littleton Award, *Professional Promise Award* (2009).

U.S. Geological Survey Special Thanks for Achieving Results (STAR) awards, *Recognition of contributions to various studies* (2002; 2001; 1999).

Northeastern University Commencement Speaker, *Selected to deliver the student commencement address* (1999).

Northeastern University Wendy Breen Kline Award, *Professional Promise Award* (1999).

Northeastern University Gregory Jarvis Scholarship Recipient, *Most Outstanding Senior for Academics and Student Activities* (1999).

Northeastern University Student Body President, *First geology major to be elected to this position* (1997-1998).

## PUBLICATIONS

### Publications in review

Farmer, W.H., **S.A. Archfield**, T.M. Over, L.E. Hay, and J.E. Kiang, *at Bureau for approval*, A comparison of methods to estimate historical daily streamflow time series in the southeast United States, *U.S. Geological Survey Scientific Investigations Report*.

### Book chapters

Parajka, J., V. Andréassian, **S.A. Archfield**, A. Bárdossy, G. Blöschl, F. Chiew, Q. Duan, A. Gelfan, K. Hlavčová, R. Merz, N. McIntyre, L. Oudin, C. Perrin, M. Rogger, J.L. Salinas, H.G. Savenije, J.O. Skøien, T. Wagener, E. Zehe, and Y. Zhang (Contributors listed in alphabetical order except first author), 2013, "Chapter 10. Prediction of runoff hydrographs in ungauged basins." In: *Runoff Prediction in Ungauged Basins: Synthesis across Processes, Places and Scales*, Blöschl, G., M. Sivapalan, T. Wagener, A. Viglione, H. Savenije, (Eds.). Cambridge University Press, UK.

**Archfield, S.A.**, 2013, "Chapter 11.7. Setting Environmental Flow Targets in Northeast USA." In: *Runoff Prediction in Ungauged Basins: Synthesis across Processes, Places and Scales*, Blöschl, G., M. Sivapalan, T. Wagener, A. Viglione, H. Savenije, (Eds.). Cambridge University Press, UK.

### Refereed journal articles

Singh, R., **S.A. Archfield**, and T. Wagener, 2014, Identifying dominant controls on hydrologic model parameter transfer from gauged to ungauged basins - a comparative hydrology approach, *Journal of Hydrology*, doi: 10.1016/j.jhydrol.2014.06.030, 2014.

- Archfield, S.A.**, J.G. Kennen, D.M. Carlisle, D.M. Wolock, 2013, An objective and parsimonious approach for classifying natural flow regimes at a continental scale, *River Research and Applications*, doi: 10.1002/rra.2710.
- Archfield, S. A.**, A. Pugliese, A. Castellarin, J.O. Skøien, and J.E. Kiang, 2013, Topological and canonical kriging for design flood prediction in ungauged catchments: an improvement over a traditional regional regression approach?, *Hydrology and Earth System Science*, 17, 1575-1588, doi:10.5194/hess-17-1575-2013, 2013.
- Archfield, S. A.**, Steeves, P. A., Guthrie, J. D., and Ries III, K. G., 2013, Towards a publicly available, map-based regional software tool to estimate unregulated daily streamflow at ungauged rivers, *Geoscientific Model Development*, 6, 101-115, doi:10.5194/gmd-6-101-2013.
- Medalie, L., R.M. Hirsch, and **S.A. Archfield**, 2012, Use of flow-normalization to evaluate nutrient concentration and flux changes in Lake Champlain tributaries, 1990–2009, *Journal of Great Lakes Research*, 38(1): 58–67, doi: 10.1016/j.jglr.2011.10.002.
- Archfield, S. A.**, and R.M. Vogel, 2010, Map correlation method: Selection of a reference streamgage to estimate daily streamflow at ungauged catchments, *Water Resources Research*, 46, W10513, doi:10.1029/2009WR008481.
- Hirsch, R.M., D. Moyer, and **S.A. Archfield**, 2010, Analysis of long-term surface water quality data using Weighted Regressions on Time, Discharge, and Season (WRTDS): motivations, method, and application to Chesapeake Bay River Input Monitoring data, *Journal of the American Water Resources Association*, 46(5):857-880, DOI: 10.1111/j.1752-1688.2010.00482.x.
- Vogel, R.M., J. Sieber, **S.A. Archfield**, M.P. Smith, C.D. Apse and A. Huber-Lee, 2007, Relations among storage, yield and instream flow, *Water Resources Research*, 43, doi:10.1029/2006WR005226, 2007.

#### **U.S. Geological Survey reports (*Two formal colleague reviews are required for publication*)**

- Linhart, S.M., J.F. Nania, D.E. Christiansen, K.J. Hutchinson, C.L. Sanders, Jr., and **S.A. Archfield**, 2013, Comparison between two statistically based methods, and two physically based models developed to compute daily mean streamflow at ungauged locations in the Cedar River Basin, Iowa: *U.S. Geological Survey Scientific Investigations Report 2013–5111*, 7 p.
- Kiang, J.E., D. Stewart, **S.A. Archfield**, E.B. Osborne, and K. Eng, 2013, A National Streamflow Network Gap Analysis, *U.S. Geological Survey Scientific Investigations Report 2013–5013*, 79 p. plus one appendix as a separate file.
- Linhart, S.M., J.F. Nania, C.L. Sanders, Jr., and **S.A. Archfield**, 2012, Computing daily mean streamflow at ungauged locations in Iowa by using the Flow Anywhere and Flow Duration Curve Transfer statistical methods: *U.S. Geological Survey Scientific Investigations Report 2012–5232*, 50 p.
- Levin, S.L., **S.A. Archfield**, and A.J. Massey, 2011, Refinement and Further Evaluation of the Massachusetts Firm-Yield Estimator Model Version 2.0, *U.S. Geological Survey Scientific Investigations Report 2011–5125*, 49 p., plus CD-ROM.
- Weiskel, P.K., S.L. Brandt, L.A. DeSimone, L.J. Ostiguy, and **S.A. Archfield**, 2010, Indicators of streamflow alteration, habitat fragmentation, impervious cover, and water quality for Massachusetts stream basins, *U.S. Geological Survey Scientific Investigations Report 2009–5272*, 70 p., plus CD-ROM.
- Archfield, S.A.**, R.M. Vogel, P.A. Steeves, S.B. Brandt, P.K. Weiskel, and S.P. Garabedian,

- 2010, The Massachusetts Sustainable-Yield Estimator: A decision-support tool to assess water availability at ungaged sites in Massachusetts, *U.S. Geological Survey Scientific Investigations Report 2009-5227*, 41 p., plus CD-ROM.
- Carlson, C.S. and **S.A. Archfield**, 2008, Hydrogeologic conditions and a firm-yield assessment for J.B. Converse Lake, Mobile County, Alabama, 1991-2006: *U.S. Geological Survey Scientific Investigations Report 2008-5005*.
- Archfield, S.A.**, and C.S. Carlson, 2006, Ground-Water Contributions to Reservoir Storage and the Effect on Estimates of Firm Yield for Reservoirs in Massachusetts: *U.S. Geological Survey Scientific Investigations Report 2006-5045*.
- Waldron, M.C., and **S.A. Archfield**, 2006, Factors Affecting Firm Yield and the Estimation of Firm Yield for 47 Streamflow-Dominated Drinking-Water-Supply Reservoirs in Massachusetts: *U.S. Geological Survey Scientific Investigations Report 2006-5044*.
- Archfield, S.A.**, and D.L. LeBlanc, 2005, Comparison of Diffusion- and Pumped-Sampling Methods to Monitor Volatile Organic Compounds in Ground Water, Massachusetts Military Reservation, Cape Cod, Massachusetts, July 1999-December 2002: *U.S. Geological Survey Scientific Investigations Report 2005-5010*.
- Bent, G.C., and **S.A. Archfield**, 2002, A Logistic Regression Equation for Estimating the Probability of a Stream Flowing Perennially in Massachusetts: *U.S. Geological Survey Water-Resources Investigations Report 02-4043*, 45 p.

## Software

- Thompson, J.L., **S.A. Archfield**, J.G. Kennen, and J.E. Kiang, 2013, EflowStats: An R package to compute ecologically-relevant streamflow statistics, (Version 1.x) [Computer software]. U.S. Geological Survey, <https://github.com/USGS-R/EflowStats>.
- Archfield, S.A.** and Steeves, P.A., 2011, The Connecticut River Unimpacted Flow tool: A GIS-based tool to estimate daily streamflow at ungaged locations in the Connecticut River Basin (Version 1.x) [Computer software]. U.S. Geological Survey, <http://webdamr.l.er.usgs.gov/s1/sarch/ctrtool/index.html>.
- Archfield, S.A.** and Granato, G.E., 2010, The Massachusetts Sustainable-Yield Estimator: A decision-support tool to assess water availability at ungaged stream locations in Massachusetts (Version 1.x), [Computer software]. U.S. Geological Survey, [http://webdamr.l.er.usgs.gov/s1/sarch/software/sye\\_mainpage.htm](http://webdamr.l.er.usgs.gov/s1/sarch/software/sye_mainpage.htm).
- Archfield, S.A.**, 2010, Flow-Duration Calculator: A tool to compute the period-of-record flow-duration curve and selected quantiles, (Version 1.x), [Computer software]. U.S. Geological Survey, *provided to staff at The Nature Conservancy and Susquehanna River Basin Commission*.
- Archfield, S.A.**, 2009, Bioperiods Flow Calculator: A tool to determine streamflow statistics for user-specified bioperiods, (Version 1.x), [Computer software]. U.S. Geological Survey, *provided to the Connecticut Department of Environmental Protection and The Nature Conservancy*.
- Archfield, S.A.**, 2009, Pond Calculator: An automated tool to determine pond stratification, (Version 1.x), [Computer software]. U.S. Geological Survey, *provided to staff at the National Park Service Cape Cod National Seashore*.

## Conference proceedings

- Archfield, S.A.** and R.M. Vogel, 2009, The implications of discretizing continuous random

variables: An example using the U.S. Geological Survey reporting standards for streamflow data, *Proceedings of the American Society of Civil Engineers World Environmental and Water Resources Congress*, Kansas City, Missouri, May 2009.

**Archfield, S.A.**, R.M. Vogel, and S.B. Brandt, 2007, Estimation of flow-duration curves at ungaged sites in southern New England, *Proceedings of the American Society of Civil Engineers World Water and Environmental Resources Congress*, Tampa, FL, 2007.

**Archfield, S.A.** and R.M. Vogel, 2005, Reliability of reservoir firm yield determined from the historical drought of record, *Proceedings of the American Society of Civil Engineers World Water and Environmental Resources Congress*, Anchorage, Alaska, 2005.

## INVITED SEMINARS AND WORKSHOPS

Department of Geolgraphy and Environmental Engineering, John Hopkins University, Baltimore, MD, November 2014.

National Research Program, Reston, VA, September 2014.

Department of Civil, Environmental and Infrastructure Engineering, George Mason University, October 2014.

U.S. Geological Survey Office of Surface Water Seminar Series, Reston, VA, August 2013.

U.S. Geological Survey Office of Surface Water Seminar Series, Reston, VA, June 2013.

U.S. Geological Survey Chief Hydrologist Seminar, Reston, VA, April 2010 (*Only one researcher from the U.S. Geological Survey is selected each year to deliver this seminar*).

U.S. Geological Survey Water Use Workshop, Baltimore, MD, April 2010.

Department of Civil and Environmental Engineering, Pennsylvania State University, University Park, PA, April 2010.

U.S. Geological Survey National Research Program Water Resources Discipline Research Seminar, Reston, Virginia, January 2009.

Department of Natural Resources Management and Engineering, University of Connecticut, February 2008.

Special Session on Low-Flow Hydrology, U.S. Geological Survey National Surface Water Conference and Hydroacoustics Workshop, St. Louis, Missouri, April 2007.

## CONFERENCE PRESENTATIONS

[\* invited; + international]

**Archfield, S.A.** and R.M. Vogel, 2014, Fitting three- and four-parameter probability distributions to daily streamflow, American Geophysical Union 2014 Fall Meeting, San Francisco, CA, December 2014.

Howden, N.J.K., T.P. Burt, F. Worrall, **S.A. Archfield**, and R.M. Vogel, 2014, The dependence structure of daily hydrological processes, American Geophysical Union 2014 Fall Meeting, San Francisco, CA, December 2014.

Farmer, W.H., T.M. Over, R.M. Vogel, **S.A. Archfield**, and J.E. Kiang, 2014, Resampling Gaged Networks to Provide Uncertainty Estimates for Daily Streamflow Predictions in Ungaged Basins, American Geophysical Union 2014 Fall Meeting, San Francisco, CA, December 2014.

Kiang, J.E., **S.A. Archfield**, and L.E. Hay, 2014, Daily Flow Estimation in Ungaged Basins - USGS progress and perspectives, American Water Resources Association 2014 Annual Water Resources Conference, Washington, DC, November 2014.

Kiang, J.E., **S.A. Archfield**, 2014, National Water Census – Daily Flow Estimation and

- Ecological Flows for Ungaged Locations, USGS National Water Quality Workshop, Shepherdstown, WV, October 2014.
- Archfield, S.A.** and R.M. Vogel, 2014, Fitting three- and four-parameter probability distributions to daily streamflow, UCOWR / NIWR / CUAHSI 2014 Annual Conference, Medford, MA, June 2014.
- Archfield, S.A.**, J.G. Kennen, D.M. Carlisle, and D.M. Wolock, 2014, An objective and parsimonious approach for classifying natural flow regimes at a continental scale, UCOWR / NIWR / CUAHSI 2014 Annual Conference, Medford, MA, June 2014.
- Farmer, W.H., **S.A. Archfield**, T.M. Over, and J.E. Kiang, 2014, A quantitative comparison of prediction methods for daily streamflow time series, UCOWR / NIWR / CUAHSI 2014 Annual Conference, Medford, MA, June 2014.
- Over, T.M., W.H. Farmer, **S.A. Archfield**, and J.E. Kiang, 2014, Disaggregation of streamflow by an index-station flow ratio method, UCOWR / NIWR / CUAHSI 2014 Annual Conference, Medford, MA, June 2014.
- Archfield, S.A.**, J.G. Kennen, D.M. Carlisle, and D.M. Wolock, 2014, An objective and parsimonious approach for classifying natural flow regimes at a continental scale, 2014 Joint Aquatic Sciences Meeting, Portland, OR, May 2014.
- Kiang, J.E., **S.A. Archfield**, and L.E. Hay, 2014, Daily Flow Estimation in Ungaged Basins for the USGS National Water Census, 2014 Joint Aquatic Sciences Meeting, Portland, OR, May 2014.
- Thompson, J.L., **S.A. Archfield**, J.G. Kennen, and J.E. Kiang, 2014, EflowStats: An R package to compute ecologically-relevant streamflow statistics, 2014 Joint Aquatic Sciences Meeting, Portland, OR, May 2014.
- Archfield, S.A.**, R.M. Hirsch, A. Viglione, and G. Blöschl, 2014, Using a peaks-over-threshold approach to assess changes in flood magnitude, volume, duration, and frequency across the United States, European Geosciences Union 2014 General Assembly, Vienna, Austria, May 2014.
- Kiang, J.E., W.H. Farmer, **S.A. Archfield**, and T.M. Over, 2014, A Quantitative Comparison of Prediction Methods for Daily Streamflow Time Series at Ungaged Sites, European Geosciences Union 2014 General Assembly, Vienna, Austria, May 2014.
- Archfield, S.A.**, J.G. Kennen, D.M. Carlisle, D.M. Wolock, 2013, An objective and parsimonious approach for classifying natural flow regimes at a continental scale, American Geophysical Union 2013 Fall Meeting, San Francisco, CA, December 2013.
- Thompson, J.L., **S.A. Archfield**, J.G. Kennen, and J.E. Kiang, 2013, EflowStats: An R package to compute ecologically-relevant streamflow statistics, American Geophysical Union 2013 Fall Meeting, San Francisco, CA, December 2013.
- Kiang, J.E., **S.A. Archfield**, D. Stewart, and K. Eng, 2013, Assessing Gaps in the U.S. Geological Survey Streamgauge Network, American Geophysical Union 2013 Fall Meeting, San Francisco, CA, December 2013.
- Howden, N.J.K., T.P. Burt, F. Worrall, and **S.A. Archfield**, 2013, Detecting change in long hydrological time series: moving on from double-mass curves, American Geophysical Union 2013 Fall Meeting, San Francisco, CA, December 2013.
- <sup>+</sup>Singh, R., **S.A. Archfield**, T. Wagener, 2013, The implications of hydrologic similarity definitions for model regionalization, 2013 IAHS-IASPO-IASPEI Joint Assembly, Gothenburg, Sweden, July 2013.
- Archfield, S.A.**, J.G. Kennen, D.M. Carlisle, D.M. Wolock, 2013, An objective and parsimonious approach for classifying natural flow regimes at a continental scale, 2013 American Water Resources Association Summer Specialty Conference on Environmental

Flows, Hartford, Connecticut, June 2013.

<sup>+</sup>Fleming, B.J. and **S. A. Archfield**, 2013, Understanding catchment classification and similarity through correlation in streamflow time series, European Geosciences Union 2013 General Assembly, Vienna, Austria, April 2013.

**Archfield, S.A.** and T. Wagener, 2012, Catchments as filters: Understanding catchment processes through annual duration curves, American Geophysical Union 2012 Fall Meeting, San Francisco, CA, December 2012.

Fleming, B.J. and **S. A. Archfield**, 2012, Catchment classification and similarity using correlation in streamflow time series, American Geophysical Union 2012 Fall Meeting, San Francisco, CA, December 2012.

Howden, N.J.K., T.P. Burt, F. Worrall, and **S.A. Archfield**, 2012, Non-stationarity in long hydrological time series: cumulative sums, autocorrelation and temporal scale-shifting, American Geophysical Union 2012 Fall Meeting, San Francisco, CA, December 2012.

**Archfield, S.A.** and R.M. Vogel, 2012, Fitting three- and four-parameter probability distributions to daily streamflow, American Water Resources Association 2012 Annual Water Resources Conference, Jacksonville, Florida, November 2012.

Over, T.M. and **S.A. Archfield**, 2012, Tests of Seemingly-Unrelated Regression for Estimation of Regional Daily Flow-Duration Curves, American Water Resources Association 2012 Annual Water Resources Conference, Jacksonville, Florida, November 2012.

Kennen, J.G., **S.A. Archfield**, J. E. Kiang, N. L. Booth, 2012, The National Water Census: Developing a National Framework for Serving Hydroecological Information to Stakeholders, American Water Resources Association 2012 Annual Water Resources Conference, Jacksonville, Florida, November 2012.

Linhart, S.M., J.F. Nania, C.L. Sanders, and **S.A. Archfield**, 2012, Computing Daily Mean Streamflow using the Flow Anywhere and Flow Duration Curve Transfer Statistical Methods at Ungauged Locations in Iowa, American Water Resources Association 2012 Annual Water Resources Conference, Jacksonville, Florida, November 2012.

<sup>+</sup>**Archfield, S.A.**, A. Pugliese, A. Castellarin, J.E. Kiang, and J.O. Skoien, 2012, “Performance of statistical interpolation to traditional methods for design-flood prediction in ungauged basins in the southeast United States”, 3<sup>rd</sup> Statistics in Hydrology Working Group (STAHY) International Workshop on Statistical Methods for Hydrology and Water Resources Management, Tunis, Tunisia, October 2012.

<sup>+</sup>**Archfield, S.A.**, A. Pugliese, A. Castellarin, J.E. Kiang, and J.O. Skoien, 2012, “Performance of topological and canonical kriging to traditional methods for design-flood prediction in ungauged basins in the southeast United States,” European Geosciences Union 2012 General Assembly, Vienna, Austria, April 2012.

<sup>+</sup>**Archfield, S.A.**, P.A. Steeves, J.D. Guthrie, and K. Ries, 2012, “A publically-available, web-based software tool to estimate daily streamflow at ungauged locations in the northeast United States,” European Geosciences Union 2012 General Assembly, Vienna, Austria, April 2012.

<sup>+</sup>Singh, R., **S.A. Archfield**, T. Wagener, and R.M. Vogel, 2012, “Transferring rainfall runoff model parameters to ungauged catchments: Does the metric by which hydrologic similarity is defined actually matter?” European Geosciences Union 2012 General Assembly, Vienna, Austria, April 2012.

**Archfield, S.A.**, P.A. Steeves, J.D. Guthrie, and K. Ries, 2012, “An interactive, GIS-based application to estimate continuous, unimpacted daily streamflow at ungauged locations in the Connecticut River Basin,” 2012 American Water Resources Association Spring GIS

Specialty Conference, March 2012.

**Archfield, S.A.** and J.E. Kiang, 2011, "Response of the United States streamgauge network to high- and low-flow periods," American Geophysical Union 2011 Fall Meeting, San Francisco, CA, December 2011.

<sup>+</sup>**Archfield, S.A.**, A. Castellarin, J.O. Skøien, and J.E. Kiang, 2011, "Coupling topological and canonical kriging for design-flood prediction in ungauged basins in the southeastern United States," European Geosciences Union Leonardo Conference Series on the Hydrological Cycle Floods in 3D: Processes, Patterns, Predictions, Bratislava, Slovakia, November 2011.

**Archfield, S.A.** and P.A. Steeves, 2011, "An interactive, GIS-based application to estimate continuous, unimpacted daily streamflow at ungauged locations in the Connecticut River Basin," U.S. Geological Survey National Map User's Conference, Denver, CO, May 2011.

<sup>\*</sup>**Archfield, S.A.** and Levin, S.L., 2011, "Estimation of daily streamflow time series at ungauged basins using the map correlation method," 8th Annual Water Resources Conference, Amherst, MA, April 2011.

<sup>+</sup>**Archfield, S.A.**, R. Singh, T. Wagener, and R.M. Vogel, 2011, "Estimation of daily streamflow time series at ungauged basins using the map correlation method," European Geosciences Union 2010 General Assembly, Vienna, Austria, April 2011.

<sup>\*</sup>**Archfield, S.A.**, D. Wolock, D. Calisle, J. Kennen, K. Eng, and J. Kiang, 2011, "An updated hydroclassification of streamflows at minimally-altered streamgages for the conterminous United States," 2011 U.S. Geological Survey National Surface Water Conference and Hydroacoustics Workshop, Tampa, FL, March 2011.

<sup>\*</sup>**Archfield, S.A.**, 2011, "Estimation of daily streamflow time series at ungauged basins using the map correlation method," 2011 U.S. Geological Survey National Surface Water Conference and Hydroacoustics Workshop, Tampa, FL, March 2011.

Wolock, D., **S.A. Archfield**, D. Calisle, J. Kennen, K. Eng, and J. Kiang, 2010, "An updated hydroclassification of streamflows at minimally-altered streamgages for the conterminous United States," American Geophysical Union 2010 Fall Meeting, San Francisco, CA, December 2010.

**Archfield, S.A.**, R.M. Hirsch, and R.M. Vogel, 2010, "Prediction intervals for estimated water-quality concentrations and fluxes with serially-correlated residuals," American Geophysical Union 2010 Fall Meeting, San Francisco, CA, December 2010.

<sup>+</sup>**Archfield, S.A.**, R.M. Vogel, T. Waneger, and R. Singh, 2010, "Rainfall-runoff model calibration at an ungauged catchment using the map-correlation method," European Geosciences Union 2010 General Assembly, Vienna, Austria, May 2010.

<sup>\*</sup>**Archfield, S.A.**, R.M. Vogel, T. Wagener, and R. Singh, 2009, "Rainfall-runoff model calibration at an ungauged catchment using the map-correlation method," American Geophysical Union Fall Meeting 2009, San Francisco, CA, December 2009 (Received an American Geophysical Union Outstanding Student Paper Award for this presentation).

<sup>\*</sup>**Archfield, S.A.**, R.M. Vogel, P.A. Steeves, S.B. Brandt, P.K. Weiskel, and S.P. Garabedian, 2009, "A decision-support tool to assess water availability at ungauged sites in Massachusetts," Northeast Association of Fish and Wildlife Agencies 65<sup>th</sup> Annual Northeast Fish and Wildlife Conference, Lancaster, Pennsylvania, April 2009.

**Archfield, S.A.**, R.M. Vogel, P.A. Steeves, S.B. Brandt, P.K. Weiskel, and S.P. Garabedian, 2009, "A decision-support tool to assess water availability at ungauged sites in Massachusetts," Geological Society of America 44<sup>th</sup> Annual Northeastern Section Meeting, Portland, Maine, April 2009.



- <sup>+</sup>Gao, Y., **S.A. Archfield**, and R.M. Vogel, 2009, "Estimation of Daily Streamflow Series at Ungauged Sites in the Semi-arid Volta Basin of West Africa," European Geosciences Union 2009 General Assembly, Vienna, Austria, April 2009.
- \***Archfield, S.A.**, 2008, "The Massachusetts Sustainable-Yield Estimator: A decision-support tool to estimate continuous daily streamflow at ungauged locations in Massachusetts," Joint meeting of the U.S. Geological Survey and The Nature Conservancy, Regional-Scale Streamflow-Ecology Relationships, Seattle, Washington, April 2008.
- Archfield, S.A.**, and P.A., Steeves, 2008, "A Desktop Application to Assess Sustainable Basin Yields and Surface-Water Resources in Massachusetts," Association of American Geographers Annual Meeting, Boston, Massachusetts, April 2008.
- Massey, A. J., L.J. Ostiguy, and **S.A. Archfield**, 2008, "Bathymetric Surveying: Determination of the minimum number of water-depth measurements needed to characterize reservoir storage," Association of American Geographers Annual Meeting, Boston, Massachusetts, April 2008.
- Steeves, P.A., and **S.A. Archfield**, 2008, "A Desktop Application to Assess Sustainable Basin Yields and Surface-Water Resources in Massachusetts," American Water Resources Association Spring Specialty Conference on GIS and Water Resources, San Mateo, CA, March 2008.
- Allaire, M. and **S.A. Archfield**, 2007, "USGS Firm-Yield Estimator Model: Evaluating the influence of small reservoirs on ground-water recharge," Geological Society of America Annual Meeting, Denver, CO, October 2007.
- Archfield, S.A.**, R.M. Vogel, and S.B. Brandt, 2007, "Estimation of continuous daily streamflow at ungauged sites in southern New England," Massachusetts Water Resources Center Fifth Annual Water Resources Conference, Amherst, MA, April 2007.
- Archfield, S.A.**, 2006, "The effect of ground water on estimates of reservoir firm yield," American Geophysical Union Joint Assembly, Baltimore, MD, April 2006.

## FUNDING AS PRINCIPAL OR CO-PRINCIPAL INVESTIGATOR

[+ Principal Investigator]

- +Water Availability for Ungauged Rivers: An Integrative, Multi-Model Approach to Estimate Water Availability at Ungauged Rivers across The United States (*Project duration: 2014-2016; Budget: \$300,000; Funding source: John Wesley Powell Center for Analysis and Synthesis*)
- National comparison of models to estimate daily streamflow at ungauged basins, (*Project duration: 2011-2015; Budget: \$750,000; Archfield share: \$300,000; Program Director: Julie Kiang, U.S. Geological Survey; Funding source: U.S. Geological Survey National Water Census Initiative*)
- +An updated hydroclassification of streamflows at minimally-altered streamgages for the conterminous United States (*Project duration: 2010-2015; Budget: \$350,000; Funding sources: U.S. Geological Survey National Water-Quality Assessment Program, U.S. Geological Survey National Water Census Initiative*)
- +Prediction intervals for estimated water-quality concentrations and fluxes with serially-correlated residuals (*Project duration: 2010-2013; Budget: \$100,000; Funding source: U.S. Geological Survey National Water-Quality Assessment Program*)

National network gap analysis of U.S. Geological Survey streamgages (*Project duration: 2011-2012; Budget: \$125,000; Archfield share: \$50,000; Program Director: Julie Kiang, U.S. Geological Survey; Funding source: U.S. Fish and Wildlife Service*)

+An interactive, GIS-based application to estimate continuous, unimpacted daily streamflow at ungaged locations in the Connecticut River Basin (*Project duration: 2008-2011; Budget: \$111,000; Funding sources: New England Association of Fish and Wildlife Agencies, The Nature Conservancy, U.S. Army Corps of Engineers*)

***[Selected as a highlighted project to be used as a foundation for developing State Wildlife Action Plans across the 13 New England states.]***

+Refinement and further evaluation of the Massachusetts Firm-Yield-Estimator model version 2.0 (*Project duration: 2007-2011; Budget: \$650,000; Funding sources: U.S. Geological Survey Cooperative Water Program, Massachusetts Department of Environmental Protection*)

+Development of a Sustainable-Yield Estimator application to determine water availability at ungaged locations in Massachusetts (*Project duration: 2006-2010; Budget: \$450,000; Funding sources: U.S. Geological Survey Cooperative Water Program, Massachusetts Department of Environmental Protection*)

## **PROFESSIONAL SERVICE**

### **Editorial boards**

Editorial Board Member, *Hydrology and Earth Systems Sciences*, 2012-Present, Journal Impact Factor: 3.148.

### **Journal manuscripts**

Manuscript reviewer for the journals:

Water Resources Research, Hydrology and Earth Systems Sciences, Journal of Hydrology, Water Research, Journal of Hydrologic Engineering, Environmental Modeling & Software, Journal of Environmental Quality, Journal of Hydroinformatics, Water Resources Management, River Research and Applications, Journal of Mountain Science, Hydrological Sciences Journal, Hydrology Research, Hydrological Processes

### **Review panels**

Surface Water and Geomorphology Peer Review Panel (member), 2014.

Reviewer for OSW stats projects, 2013

Surface Water and Geomorphology Peer Review Panel (member), 2010.

### **Proposal reviews**

Hydrologic Sciences Competition, *National Science Foundation - Division of Earth Sciences*, Spring 2013 (1 proposal); Fall 2012 (2 proposals).

Agency for Toxic Substances and Disease Registry, *Center for Disease Control*, Fall 2012 (1 proposal).

PSEG Institute for Sustainability Studies, *Montclair State University*, Summer 2012 (2 proposals).

## Briefings and News Releases

Presentation titled, “USGS work on streamflow estimation at ungaged sites,” to the USGS/NASA Coordination Committee, January 2014.  
Technical release on recent findings of Kiang et al. [2013]:  
[http://www.usgs.gov/newsroom/article.asp?ID=3685#.Ui85RpLVD\\_g](http://www.usgs.gov/newsroom/article.asp?ID=3685#.Ui85RpLVD_g)  
Briefing on the findings of Kiang et al. [2013] to the *Office of the Assistant Secretary for Water and Science, U.S. Department of the Interior*, September, 2013.

## External reviewer for other government agency reports

Reviewer for chapter titled, “Water, Wastewater, and Sanitation” in the Second Urban Climate Change Resources Network (UCCRN) Assessment Report on Climate Change and Cities, September 2014.  
Reviewer for *Center for Disease Control Agency for Toxic Substances and Disease Registry* reports titled, “Supplement 2: Descriptions and Characterizations of Water-Level Data and Groundwater” and “Supplement 4: Simulation of Three-Dimensional Groundwater Flow,” September 2012.  
Reviewer, *Environmental Protection Agency Technical Guide* titled, “Identifying and protecting healthy watersheds: A technical guide,” 2009.

## Committee membership

Task leader, Hydrologic Services and Hazards in Multiple Ungauged Basins Working Group, *International Association of Hydrological Sciences Scientific Decade (2013-2022) -- Panta Rhei: Change in Hydrology and Society*, 2013-Present.  
Member, Anthropogenic and Climatic Controls on Surface Water Availability Working Group, *International Association of Hydrological Sciences Scientific Decade (2013-2022) -- Panta Rhei: Change in Hydrology and Society*, 2013-Present.  
Member, U.S. Geological Survey National Water Census Ad Hoc Advisory Committee, 2010-2012. *The Ad Hoc Advisory Committee is a group of national stakeholder organizations that provide input on the priorities for the U.S. Geological Survey National Water Census Initiative.*  
Member, Pennsylvania Instream Flow Committee, 2009-2012.  
Member, Surface-Water Hydrology Committee, Environmental and Water Resources Institute, American Society of Civil Engineers, 2008-2013  
Member, Human Water Use Work Group, U.S. Geological Survey National Water Census Implementation Plan, September 2009-January 2010.  
Member, Ecological Water Use Work Group, U.S. Geological Survey National Water Census Implementation Plan, September 2009-January 2010.

## Invited panel member

Panel member, *Northeastern University Science Career Forum*, Boston, MA, February 2013.  
Panel member for session titled, “StreamStats Panel Discussion,” *2011 National Surface Water Conference and Hydroacoustics Workshop*, Tampa, FL, March 2011.

Panel member for session titled, “Networking for a career in public service”, *Tufts University symposium on Preparing for a Career in Public Service*, Medford, MA, October 2010.  
Panel member for session titled “Approaches for Building a Hydrologic Foundation for Regional Analysis of Flow-Ecology Relations,” *Joint meeting of the U.S. Geological Survey and The Nature Conservancy on Regional-Scale Streamflow-Ecology Relationships*, Seattle, WA, April 2008.

### **Session organization**

Lead Convener, 2014; 2013; 2012; 2011; 2010, European Geosciences Union General Assembly.  
Lead Convener, 2014, American Geophysical Union Fall Meeting.  
Co-convener, 2014, UCOWR-NIWR-CUAHSI 2014 Annual Conference.  
Co-convener, 2013, American Geophysical Union 2013 Fall Meeting.  
Co-organizer, 2010; 2009, *World Environmental and Water Resources Congress*.

### **TEACHING AND MENTORING EXPERIENCE**

#### **Courses**

Instructor, QW1075 - Statistical Methods for Environmental Data Analysis, U.S. Geological Survey Training Course, May 12-16, 2014. (Course coordinator: Lori Sprague)

#### **Lectures**

Department of Civil and Environmental Engineering, Worcester Polytechnic Institute, Course CE 574 - Water Resources Management, November 2009.

#### **External examiner**

William Asquith, Ph.D. candidate, “Univariate Distributional Analysis with L-moment Statistics using R,” Department of Civil and Environmental Engineering, *Texas Tech University, Lubbock, Texas*, Graduated: February 2011.

#### **Graduate student committees**

Faith Kuria, Ph.D. candidate, “Uncertainty Analysis of Water Supply Reservoir Yields, and Minimum Length of Streamflow Record Required for Pre-specified Reservoir Yields, Department of Civil and Environmental Engineering,” *Tufts University, Medford, Massachusetts*, Graduated: April 2014.  
Alessio Pugliese, M.S. candidate, “Geostatistical Interpolation Techniques,” *University of Bologna, Italy*, Graduated: July 2012.  
William Farmer, M.S. candidate, “Development of Gridded/Catchment Monthly Streamflow Time Series for the United States, South Africa and the Nile River Basin,” Department of Civil and Environmental Engineering, *Tufts University, Medford, Massachusetts*, Graduated: November 2011.

David Roman, M.S. candidate, “Multivariate Models of Watershed Suspended Sediment Loads for the Eastern United States,” Department of Civil and Environmental Engineering, *Tufts University, Medford, Massachusetts*, Graduated: June 2010.

### **Other teaching and mentoring experience**

Mentor, U.S. Geological Survey (USGS) Mentoring Program, 2013-2014

Mentor, Women in Geosciences Mentoring Programme, European Geosciences Union, 2011-Present.

Lead author of the statistical hydrology teaching module for the MODular Curriculum for Hydrologic Advancement (MOCHA) project, 2011-2013. *MOCHA is an NSF-funded education initiative to “establish an online faculty learning community for hydrology education and a modular hydrology curriculum based on modern pedagogical standards” (<http://www.mocha.psu.edu/about>). Each MOCHA module represents three hours of lecture material on a particular topic intended for inclusion in an undergraduate hydrology course.* (Co-authors: Veronica Griffis and Lucy Marshall)

Mathematics tutor, Northeastern University, September 1998-June 1999. *Sole mathematics tutor for student athletes; provided weekly tutoring sessions in undergraduate courses including algebra, beginning and advanced calculus (Calculus Levels I through IV) and differential equations.*

### **PROFESSIONAL MEMBERSHIPS**

American Geophysical Union (AGU)

European Geosciences Union (EGU)

Earth Sciences Women’s Network (ESWN)